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13. ABSTRACT *(Maximum 200 words)*
The U.S. Army has conducted human dimensions research since the 1940's. Similarly, the study of leadership has been a critical area for Military researchers for even longer. we present data here that examines human dimensions in the military via a stress model while also examining the important role of leadership-specifically, the extent to which leaders keep their soldiers informed. Data examining the effects of leader information on soldier reports of psychological well being were collected in deployed settings from 1990-1997. The extent to which leaders communicated information to their soldiers was inversely related to psychological distress. In 1995, the Walter Reed Army Institute of research began to develop a research model to examine both soldier stressors and the role of leadership. The WRAIR Stressor-Strain_ Performance model has been used since its development to assess soldier stressors and strains. Recently, data examining leader information as well as the stressors of work unpredictably was hypothesized to perform as a moderator of stress stemming from work unpredictablility and a number of outcomes (psychological and organizational). These findings suggest that when leaders keep their soldiers well-informed, the magnitude of the relationship between work unpredictably stress and strains is buffered. These data point to a proactive way that commanders can inoculate their soldiers from some of the deleterious effects of military stressors through their own leadership behavior. future research should assess leader information in deployed settings as well as address psychometric development of both leadership information, work unpredictably, and hasty taskings as constructs of interest to military researchers.

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The US army has conducted human dimensions research since the 1940s. Similarly, the study of leadership has been a critical area for military researchers for even longer. We present data here that examines human dimensions in the military via a stress model while also examining the important role of leadership—specifically, the extent to which leaders keep their soldiers informed. Data examining the effect of leader information on soldier reports of psychological well being were collected in deployed settings from 1990-1997. The extent to which leaders communicated information to their soldiers was inversely related to psychological distress. In 1995, the Walter Reed Army Institute of Research began to develop a research model to examine both soldier stressors and the role of leadership. The WRAIR Stressor-Strain-Performance Model has been used since its development to assess soldier stressors, adverse reactions to stressors, and the role of any moderating factors between stressors and strains. Recently, data examining leader information as well as the stressors of work unpredictability and hasty taskings were collected with s large training brigade. Leader information was hypothesized to perform as a moderator of stress stemming from work unpredictability and number of strain reactions. Results demonstrated that leadership information did act as a moderator of the relationship between work unpredictability and a number of outcomes (psychological and organizational). These findings suggest that when leaders keep their soldiers well-informed, the magnitude of the relationship between work unpredictability stress and strains is buffered. These data point to a proactive way that Commanders can inoculate their soldiers from some of the deleterious effects of military stressors through their own leadership behavior. Future research should assess leader information in deployed settings as well as address psychometric development of both leadership information, work unpredictability, and hasty taskings as constructs of interest to military researchers.

Leader Information Moderating Strains Associated with Work Unpredictability in the US Army

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Introduction

Human Dimensions Research and the Role of Leader Information

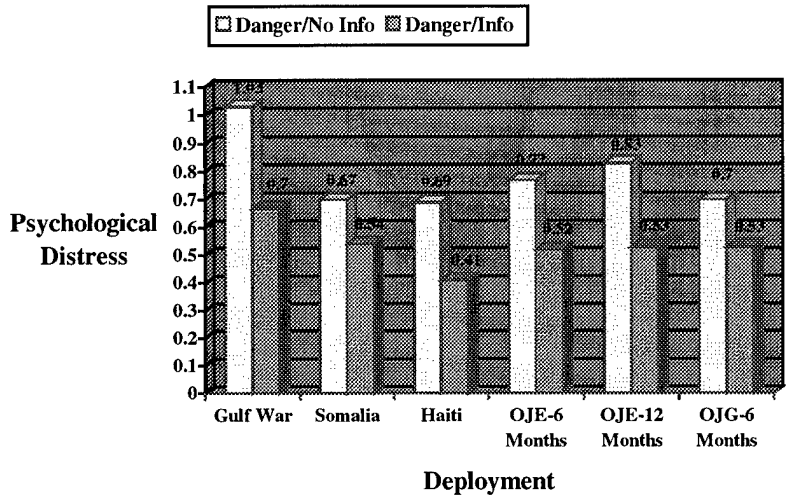
The US army has conducted human dimensions research since the 1940s. Similarly, the Army has long been active in research involving military leadership. In a convergence of these two areas of research, we present an occupational stress model that accounts for both. Specifically, we present data here that examine the important role leaders can play in buffering soldiers' reactions to stress.

Given the hazardous nature of military duty across operational settings, it is necessary for military researchers to search for ways to temper soldier reactions to stressors that operate in military environments. By identifying buffers of stress, leaders can help soldiers stay healthy and mission-ready. One approach to dealing with soldier health and well-being in military settings is to examine the role leader behavior may play in buffering adverse reactions to stress experienced by soldiers. That is, by studying specific leader behaviors perhaps we can gain insight into what leaders can do to reduce the impact of stress on their soldiers. The present paper examines the role of one such leader behavior, leader information.

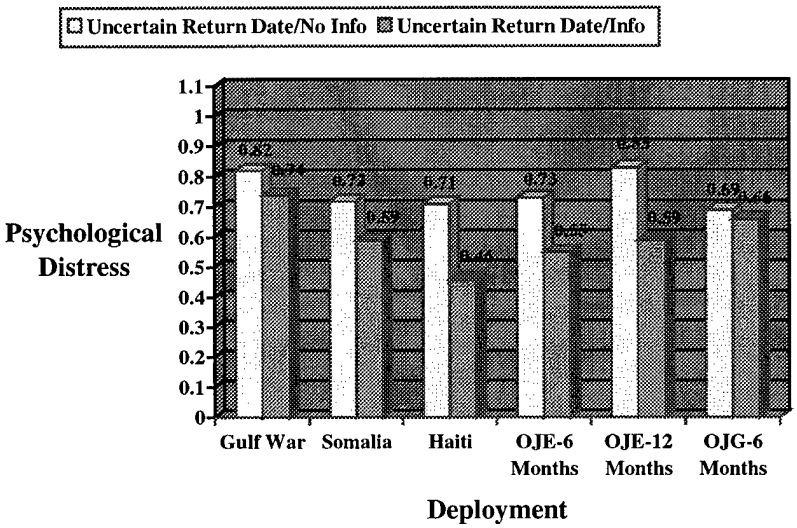
Leader information can be defined as the extent to which leaders keep their troops "in the information loop" on situational and mission-relevant data. It is our contention that this may be a critical way for leaders to alleviate stress that soldiers experience through direct communication of goals, missions, standards, and situational updates. We believe that because military duty is demanding enough, leaders who are poor at disseminating information to their soldiers may actually exacerbate stressor-strain reactions. Thus, being proactive in keeping soldiers informed might be a very simple way for leaders to buffer their soldiers from adverse reactions to stress experienced in operational settings. We provide some preliminary evidence for this assertion below.

Leader Information across Deployments

Data examining the effect of leader information on soldier reports of psychological well-being have been collected across many deployed settings from 1990-1997. The figures below provide preliminary descriptive evidence supporting the role that leader information plays in deployed settings (see Stuart & Halverson, 1997). The figures below compare the rates of psychological distress among soldiers whose leaders either did a good job keeping them informed or did not do a good job keeping them informed when performing their duty in dangerous situations. It can readily be discerned that there are large differences between the two groups (informed, not informed) on this criterion and that this finding is seen across all deployed settings from Operation Desert Shield/Storm in 1990-1991 to Operation Joint Endeavor in 1997.



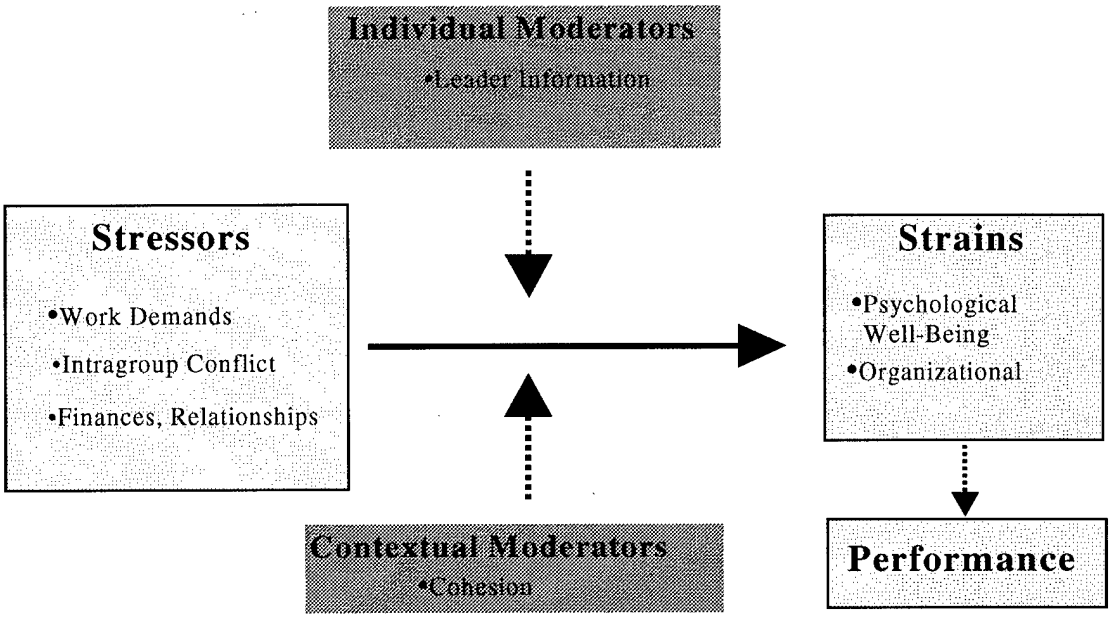
In the figure below, one can see the same pattern holding. Soldiers in each of these deployment settings were asked the degree to which their leader kept them informed about missions/situations when their return from deployment date was uncertain. Soldiers whose leaders keep them informed better experience less psychological distress than soldiers whose leaders do not keep them informed as well. These straightforward descriptive findings suggest that leader information can have a significant effect of psychological functioning of soldiers when in deployed settings. To further probe this relationship, it is now important to adopt working model to frame the research question in more detail.



The WRAIR Stressor-Strain-Performance Model

Implicitly or explicitly all research is guided by a research model or paradigm. In 1995, the Walter Reed Army Institute of Research began to develop a research model that broadly examined human dimensions research within an occupational stress framework. In this broad framework, one can examine the gamut of human dimensions phenomena and apply a systematic strategy to guide research questions. The WRAIR Stressor-Strain-Performance Model has been used since its development to assess soldier stressors, strains, and the role of any moderating factors between stressors and strains.

The WRAIR Stressor-Strain-Performance Model



The WRAIR Stressor-Strain-Performance Model is an attempt to explicitly differentiate among stressors, moderators, and strains by providing a theoretical framework for considering interrelationships among these variables. In the figure, the main categories (stressors, strains, etc.) are constant, but the specific elements vary by setting. Of primary interest here is framing the relationship between leader information, which is conceptualized as an individual-level moderator, with strains both that are psychological and organizational in nature. Lastly, since we propose that leader information is a moderator variable, we need to consider carefully what type of stressor it moderates.

Work Unpredictability: A Stressor Construct of Interest

After reviewing the relationships found in previous deployments between leader information and psychological distress, we began to think about how exactly leader information could buffer adverse reactions to stress. Considering the WRAIR Model, we propose a construct of interest that can be characterized as a stressor, work unpredictability. Stress attributed to work unpredictability can be conceptualized as a stressor in the classic sense—an organizational feature to which an adaptive response is required. It seems straightforward then to suggest that the degree to which the work environment is unpredictable may be positively related to strains experienced by soldiers. Specifically, we conceptualized this construct as being made up of two components: work hours unpredictability and work content unpredictability. To this end, we developed a few items to assess this aspect of work stress by asking respondents about the degree to which they can predict the length of their typical workday, and the degree to which they are asked to perform "hasty" taskings that are often unrelated to their primary duty responsibilities.

Hypotheses

To directly test our assertions made above we developed 3 research hypotheses:

1) Leader information will be inversely related to strains reported by soldiers.
2) Work unpredictability will be positively related to strains reported by soldiers.
3) Leader Information will moderate the relationship between work unpredictability and strains reported by soldiers. Specifically, this moderation effect will be in the form of a buffering effect.

Method

Participants

The sample consisted of 1700 soldiers from a large training brigade. Of the sample, 91% were male, 9 % female. Racially, 51% of soldiers were Caucasian, 17% African-American, 17 % Hispanic, 3% Asian or Pacific Islander, 2% Native American, and 10% responded as Other. The average age of these soldiers was 25.3 years. 81% of the sample had a high school diploma as their highest education level, while 5% had an Associate's degree, 10% had a Bachelor's level degree, and 4% had a Master's degree or higher

Procedure

Walter Reed Army Institute of Research (WRAIR) collected survey data as part of a large collaborative projected conducted with the Center for Army Leadership (CAL). CAL researchers field-tested a multi-rater assessment measure with a large training brigade. The multi-rater instrument was developed to provide unit leaders feedback on their respective strengths and weaknesses. WRAIR surveyed 1700 soldiers from these leaders' units. The paper-and-pencil surveys were administered through the chain of command and asked soldiers to respond to climate information such as stressors and strains experienced as a US Army soldier.

Scales

Leader Information was assessed using a 4-item scale developed at the Walter Reed Army Institute of Research. A typical item is "My leaders regularly keep the unit informed on our missions." The response format used was a 5-point Likert scale with a response of "1" indicating the respondent strongly disagrees and a response of "5" indicating the respondent strongly agrees. The leader information scale had a mean of 3.39 with a standard deviation of .85. Coefficient alpha reliability was .86.

As noted above, we developed two items measure work unpredictability. These items were, "Indicate the stress experienced as a result of not knowing the length of your typical work day" and "Indicate the extent to which you are assigned hasty taskings not primarily related to your duties" The response format was anchored on a 5-point Likert scale with a score of "1" meaning not at all and a score of "5" meaning very often. The mean for this scale was 3.43 with a standard deviation of .91. Coefficient alpha reliability was .64.

To assess strains experienced by soldiers we used the following scales: Combat Readiness ($M = 3.15$, $SD = .85$, $\alpha = .86$) (WRAIR Scale), Affective Commitment ($M = 2.85$, $SD = 1.01$, $\alpha = .89$) and Continuance Commitment ($M = 2.46$, $SD = 1.10$, $\alpha = .88$) (Army Research Institute Scale), Job Satisfaction ($M = 3.10$, $SD = 1.07$, $\alpha = .87$) (derived from Hackman & Oldham, 1975), Psychological Well-Being ($M = 2.97$, $SD = .52$, $\alpha = .85$) (Goldberg, 1972), Depression ($M = 1.76$, $SD = 1.56$, $\alpha = .91$) (Mirowsky, 1996), and Morale ($M = 3.20$, $SD = .90$, $\alpha = .87$) (WRAIR Scale).

Analyses conducted

To address hypotheses 1 and 2, we used simple bivariate correlations—Pearson r's. To test for the moderating effect of leader information in hypothesis 3 we used moderated multiple regression analyses following a procedure recommended by Aiken and West (1990). Furthermore, because of the noted difficulty in detecting moderator effects in field studies (see Evans, 1985; McClelland & Judd, 1993) and the concerns of statistical power in detecting interaction effects, we followed the recommendation of Aguinis and Stone-Romero (1997) and used a p. value cutoff of .15 for the interaction term.

Results

Both hypotheses 1 and 2 were supported; leader information was negatively related to all strains, organizational and psychological, and work unpredictability was positively related to all strains as well. All were significant at the $p < .01$ level.
Hypothesis 3 was partially supported. Leader Information moderated the relationship between work unpredictability and depression and morale. It did not, however, moderate the relationship between any other work unpredictability--strain combination.

Discussion

These findings suggest that when leaders keep their soldiers well-informed, the magnitude of the relationship between work unpredictability stress and strains is buffered. These data point to a proactive way that Commanders can inoculate their soldiers from some of the deleterious effects of military stressors through their own leadership behavior. The bottom line is that leaders who effectively disseminate information may be able to buffer stress reactions. The military is a dynamic organization. Stressors and strains experienced by soldiers will change from time to time and from setting to setting, however, it is doubtful that the role a leader plays will wax or wane. Rather, leaders will remain a constant in an ever-changing military. The present data suggest a pro-active means by which leaders can inoculate the youngest and most inexperienced soldier in his or her unit—by simply keeping them informed.

The use of an occupational stress model such as the WRAIR model presented here is useful in that it articulates a straightforward way in which we can study health and well being outcomes for our soldiers. However, there are some limitations to the present study. First, the data presented here were self-report in nature and suffer to some extent form common method bias. Secondly, because data collected were correlational in nature, we cannot make any causal inferences based on it. Lastly, more scale development is needed in studying work unpredictability and leader information dissemination. More refined measures must be developed. However, both are promising constructs for researchers to study.

Implications and Future Work

In future research, researchers need to assess leader information across operational settings (e.g., humanitarian, peace-keeping, combat, training, garrison). Similarly, because most military hierarchies use an officer and non-commissioned officer corps, both should be considered in understanding the role of leader information. Something more for researchers to consider may be if leadership information might be better conceived as a contextual moderator. That is, perhaps the appropriate level which to measure this construct is the group level. One could make the argument that leader information can be seen as a shared group attribute as well. Lastly, the WRAIR model also contains Performance as a component of interest. It is, in effect, the ultimate criterion; one that remains very difficult to measure as many researchers lament. In future work, researching the effect of leader information on dimensions of performance is necessary for further model development.

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Leader Information Moderating Strains Associated With Work Unpredictability in the US Army

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Outline

- **The Mission of the Department of Operational Stress Research (DOSR):** The Research Agenda
- **Research Question:** The Role of Leadership Information on Operational Stress in the Military
- **DOSR (1990-1997):** Examining Leader Information in Deployments
- **Outcomes of Interest:** Psychological and Organizational
- **Walter Reed Army Institute of Research Stressor-Strain-Performance Model:** Refining our Research Model
- **Testing Leadership Information as a Moderator**
- **Discussion of Data collected with a Training Brigade**
- **Implications and Future Research**

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In this Discussion I will:

- **Present** the Department of Operational Stress Research Program
- **Present** data addressing the role of leader information in deployed settings
- **Compare** leaders who do a good job of keeping soldiers informed and those who do not during deployments
- **Present** the WRAIR Stressor-Strain-Performance Model & define model components
- **Examine** leader information as a moderator of work unpredictability stress and strain linkage
- **Discuss** implications and future work in this area

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Walter Reed Army Institute of Research

- **Department of Operational Stress Research:**
  - **Operates** under a robust model of occupational stress: the WRAIR Stressor-Strain-Performance Model
  - **Assesses** stressors and strains impacting soldier and unit-level health, well-being, and performance
  - **Collects** survey-based and archival data with deployed, garrison, and training for 1) research purposes and 2) Army-wide Command consultation
  - **Collaborates** with other military and civilian research organizations

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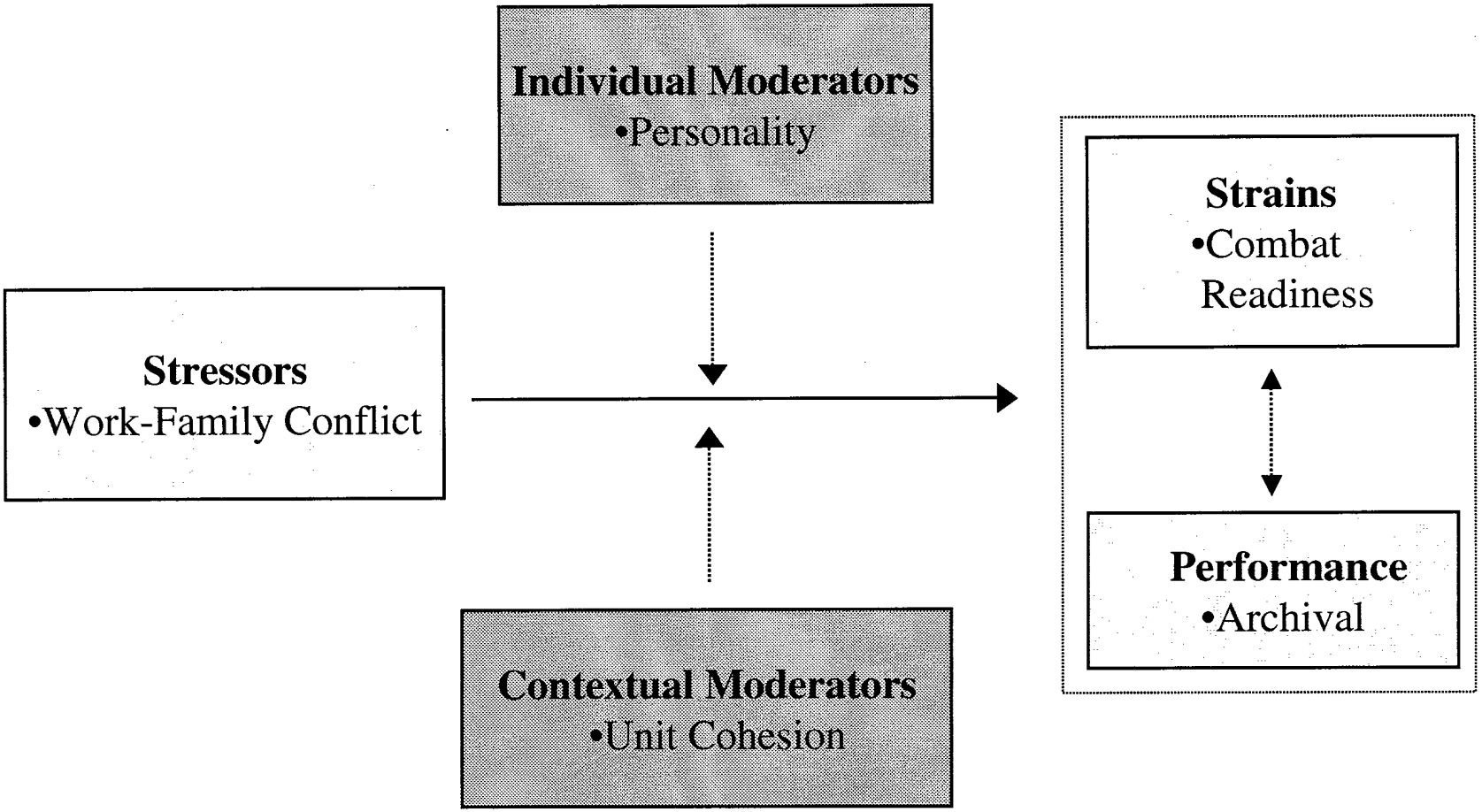
WRAIR Stressor-Strain-Performance Model Illustrated



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Studying Leadership Information: How can it impact Operational Stress in the Military?

- **Leadership is, and always will be, of critical importance to the military.**
- **A good deal of leadership research deals with the study of traits.**
  - Impact issues personality and selection but difficult issue
- **From a research perspective, what can tangibly be assessed: leader behavior.**
  - We measure leader information—(scale-based)
  - Premise: Leaders that do a good job of keeping their troops informed may be able to inoculate their troops against the deleterious effects of high stress and strain within the unit.
  - Bottom Line: Telling a leader about a change in behavior that may help his/her unit

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Past Research Assessing the Effect of Leader Information in Deployments

- **Comparison Data Sets from Recent Deployments**
  - Operation Desert Storm/Shield (n = 1,293)
  - Somalia (n = 2,435)
  - Haiti (n = 3,205)
  - Bosnia 1996 6-month (n = 2,259), 12-month (n = 1527)
  - Bosnia 1997 6-month (n = 1,309)

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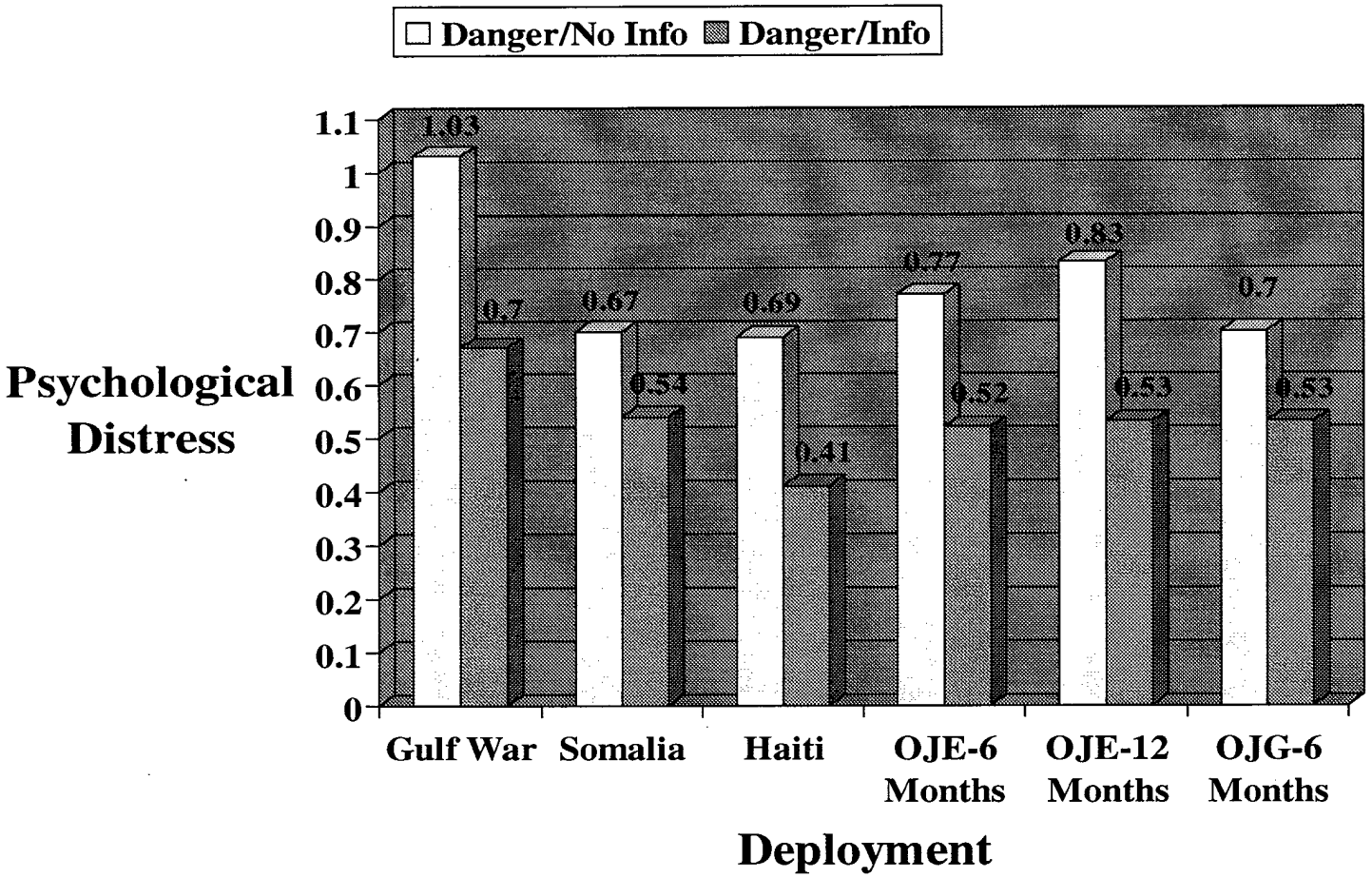
In dangerous situations, distress levels are significantly lower when leaders regularly brief soldiers (inform) about the situation.



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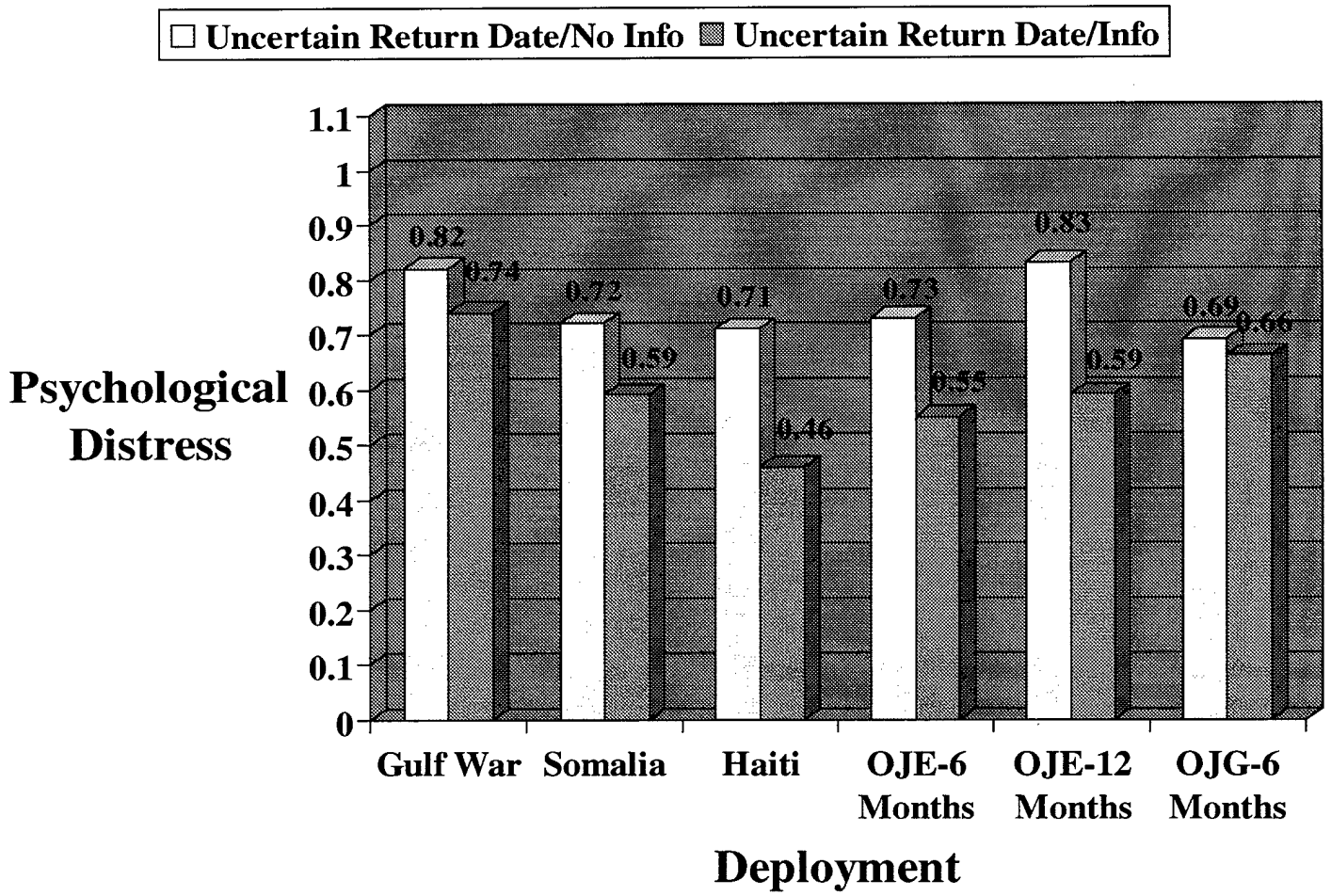
When return from deployment date is uncertain, psych. distress levels are sig. lower if leaders inform soldiers about the situation



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Recent Research Examining Leader Information in our Research Model

- **Collaboration between Center for Army Leadership (CAL) and Walter Reed Army Institute of Research (WRAIR)**
- **Survey data collected from 1700 soldiers from an Active Duty Training Brigade**
- **Explicitly tested leader information's moderating effect in the WRAIR Stressor-Strain-Performance Model**
- **Identified work unpredictability as a stressor to be studied:**
  - Preliminary work on this stressor—needs further scale development

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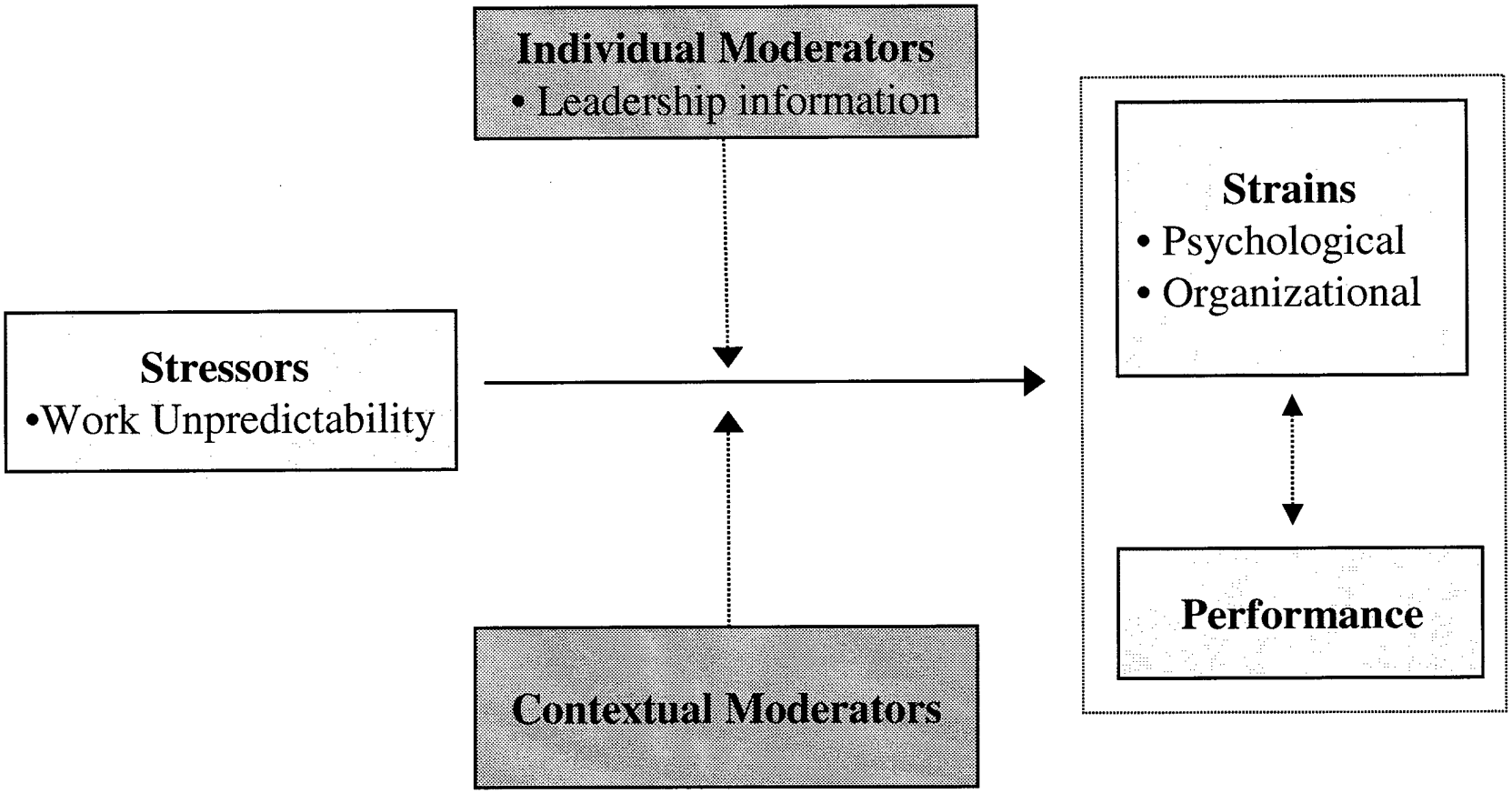
WRAIR Stressor-Strain-Performance Model: The Research Question in the Model



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Method: Outcomes of Interest--Strains

- **Psychological**
  - **Well-Being** (Goldberg, 1972)
  - **Depression** (Mirowsky, 1996)
  - **Morale** (WRAIR Scale)

- **Organizational**
  - **Affective Commitment** (ARI Scale)
  - **Continuance Commitment** (ARI Scale)
  - **Job Satisfaction** (Hackman &Oldham, 1975)
  - **Combat Readiness** (WRAIR Scale)

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Method: Leader Information and Work Unpredictability Items

- **Measuring Leadership information**
  - "My unit is regularly briefed by our leaders about our missions"
  - "My leaders regularly brief the unit on what we have achieved in our missions."
  - "In dangerous situations, my unit is regularly briefed by our about our missions"

- **Measuring Work Unpredictability**
  - "Not knowing length of work day"
  - "Receiving hasty taskings"

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Method: Analyses

- **Analyses conducted**
  - **Descriptive Statistics**—Reliabilities, Frequencies, Means, SDs
  - **Zero-order correlations**—Pearson r—the relationship between work unpredictability and leader information and the outcome strains
  - **Moderated Multiple Regression**: Testing for the Moderating Effects of Leadership Information on the relationship between work unpredictability and outcome strains

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*Means, Standard Deviations, and Reliabilities of Study Variables

Variable	M	SD	α
Leader Information	3.39	.85	.86
Work Unpredictability	3.10	1.40	.64
Combat Readiness	3.15	.89	.80
Affective Commitment	2.85	1.01	.89
Continuance Commitment	2.46	1.10	.88
Job Satisfaction	3.10	1.07	.87
Psych. Well Being	2.97	.52	.85
Depression	1.76	1.56	.91
Morale	3.20	.90	.87

*All scales used a 5-point Likert Response Format

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Correlations between Leader Information and Strains (Psychological & Organizational)

Strain Outcome	Leader Information
Combat Readiness	r = .42 *
Affective Commitment	r = .36*
Continuance Commitment	r = .17*
Job Satisfaction	r = .25*
Psychological Well Being	r = .26*
Depression	r = -.23*
Morale	r = .38*

All scales used a 5-point Likert Response Format; * All correlations p , < .001

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Correlations between Work Unpredictability and Strain Outcomes

Strain Outcome	**Work Unpredictability**
Combat Readiness	r = -.17*
Affective Commitment	r = -.19*
Continuance Commitment	r = -.04
Job Satisfaction	r = -.24*
Psychological Well Being	r =- .27*
Depression	r = .28*
Morale	r =- .25*

All scales used a 5-point Likert Response Format; * All correlations p , < .001

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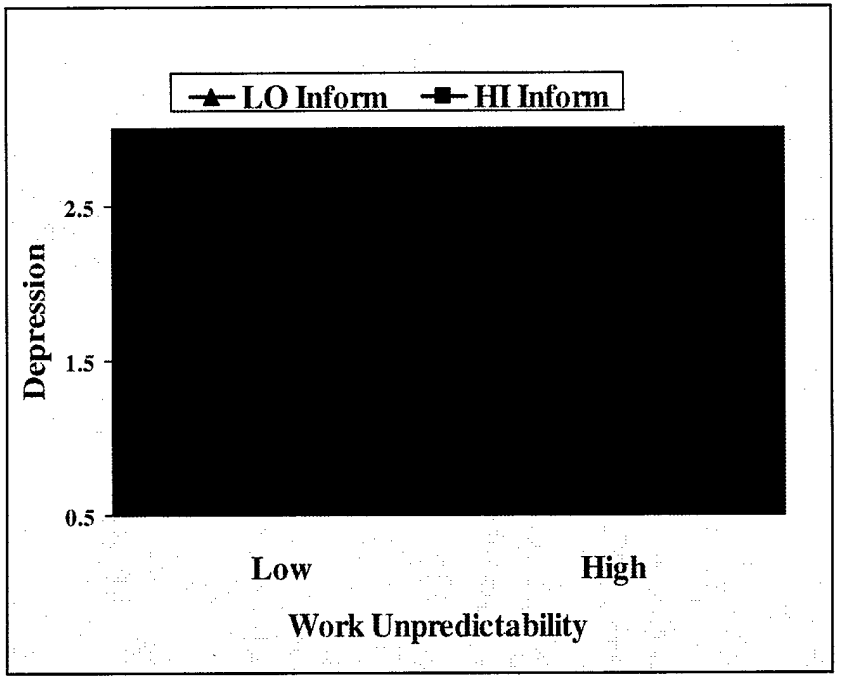
Moderated Regression Analyses: The Moderating Effect of Leader Information on Depression

Variable	β	t	Sig.
1. Work Unpredictability	.25	10.35	.00
2. Leader Information	-.19	-7.91	.00
Cross-Product of 1 & 2	-.04	-1.55	.11



Predictors and Interaction Term are standardized following a procedure recommended by Aiken & West (1990). Thus the beta-weights reported are standardized. We adopted a more liberal p value cutoff for the moderator following the recommendations of McClelland &Judd, (1993) and Evans (1985)

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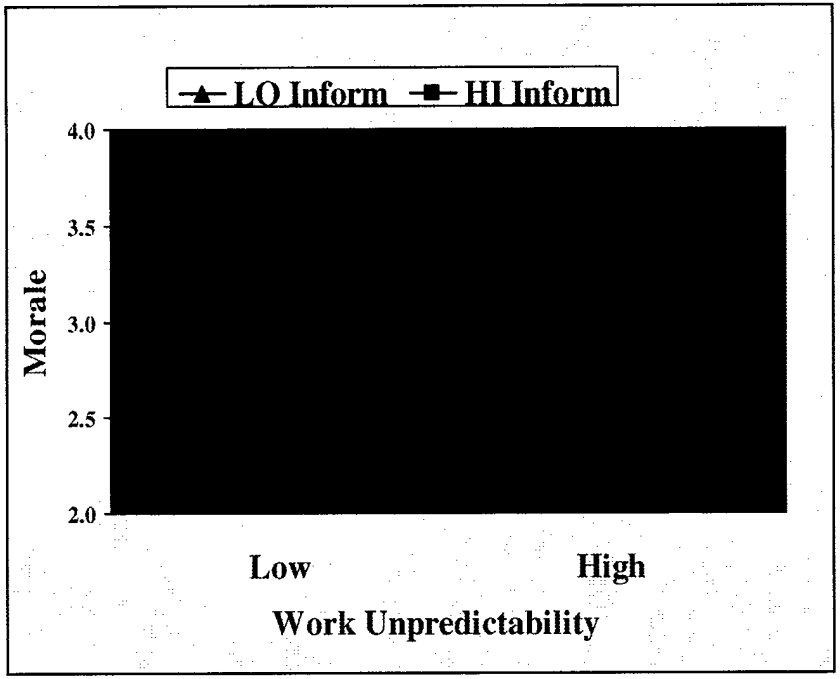
Moderated Regression Analyses: The Moderating Effect of Leader Information on Morale

Variable	β	t	Sig.
1. Work Unpredictability	-.19	-8.34	.00
2. Leader Information	.35	15.41	.00
Cross-Product of 1 & 2	.05	1.89	.05



Predictors and Interaction Term are standardized following a procedure recommended by Aiken & West (1990). Thus the beta-weights reported are standardized. We adopted a more liberal p value cutoff for the moderator following the recommendations of McClelland &Judd, 1993 and Evans (1985)

Discussion

- **Strengths**
  - Leader information matters—We can study tangible facets of leadership—behaviors as moderators.
  - Military is dynamic, however, leaders will remain a constant.
  - Work unpredictability identified as a Stressor of Study.
  - Model-driven approach to examine many stressors and strains experienced by soldiers and look for moderators.
- **Limitations**
  - Scale development and psychometric work needed
  - Self-report survey data

Implications and Future Research

- **Provides Commanders with a proactive means to defray some of the impact of stress that is inherent in military settings.**
- **Military researchers need to further explore intervening variables that can ameliorate the link between stressors and strains.**
  - Leadership behaviors at both Officer and NCO levels.
  - Search for moderators across military settings (e.g., training, garrison, deployments).

Implications and Future Research

- **Examine leadership information as a contextual moderator.**
- **What is leader information's link with Unit/Individual Performance?**
- **Consider the operational setting.**
  - Deployment (Peacekeeping, Humanitarian, Combat)
  - Garrison
  - Training

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